

SOLID-STATE RADIATION DETECTOR USING A SINGLE
CRYSTAL OF COMPOUND SEMICONDUCTOR InSb

ABSTRACT OF THE DISCLOSURE

A high-purity InSb single crystal not artificially
5 doped with impurities is used as a radiation detecting
medium. In order to obtain diode characteristics, a Au-Pd
alloy is used to form a surface barrier layer. At 4.2 K,
the device resistance of the thus fabricated solid-state
radiation detector was as large as 1.4 k Ω and the rise time
10 of output signals from a charge-sensitive preamplifier was
as short as 0.4 μ s, indicating reduced trapping of
electrons or positive holes. The detector was also capable
of measuring α -ray spectra over the temperature range from
2 K to 50 K.